



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,540	12/26/2001	Yasutomo Watanabe	35.C16067	8300
5514	7590	10/31/2003	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO			BROOKE, MICHAEL S	
30 ROCKEFELLER PLAZA			ART UNIT	
NEW YORK, NY 10112			PAPER NUMBER	

2853

DATE MAILED: 10/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,540

Applicant(s)

WATANABE, YASUTOMO

Examiner

Michael S. Brooke

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/15/03 has been entered.

Claim Objections

2. Claims 1, 9 and 10 objected to because of the following informalities:

Each of these claims has been amended to recite that "the connection electrodes, the bump electrode, and the electrical wiring member are vertically overlapped with each other through the bump electrode." This language is not accurate, as the bump electrode cannot be vertically aligned with itself. This language should be changed to read that "the connection electrode, the bump electrode and the electrical wiring member are vertically overlapped, wherein the bump electrode is located between the connection electrode and the wiring member."

3. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beerling et al. (6,325,488) in view of Wong et al. (6,188,414).

Beerling et al. teaches an ink jet print head as shown below:

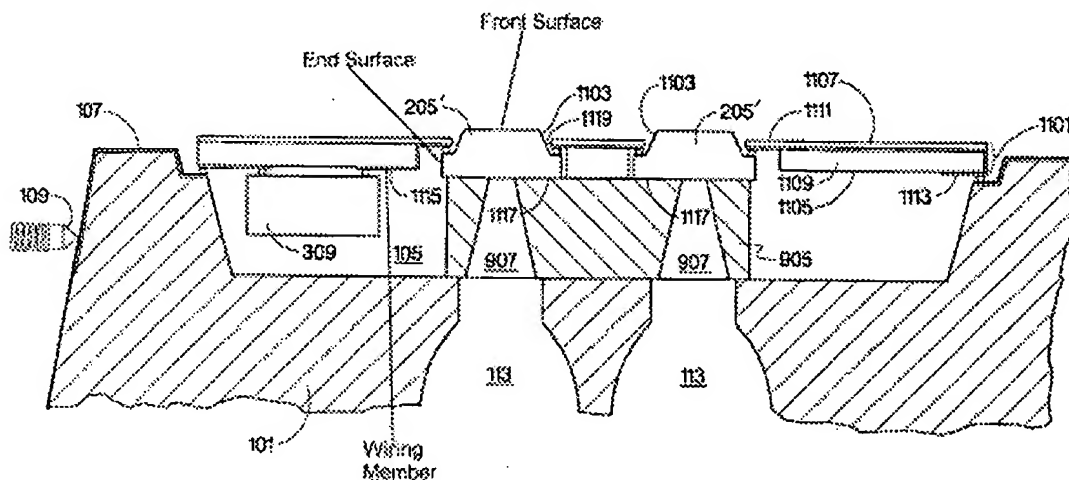


Fig. 11

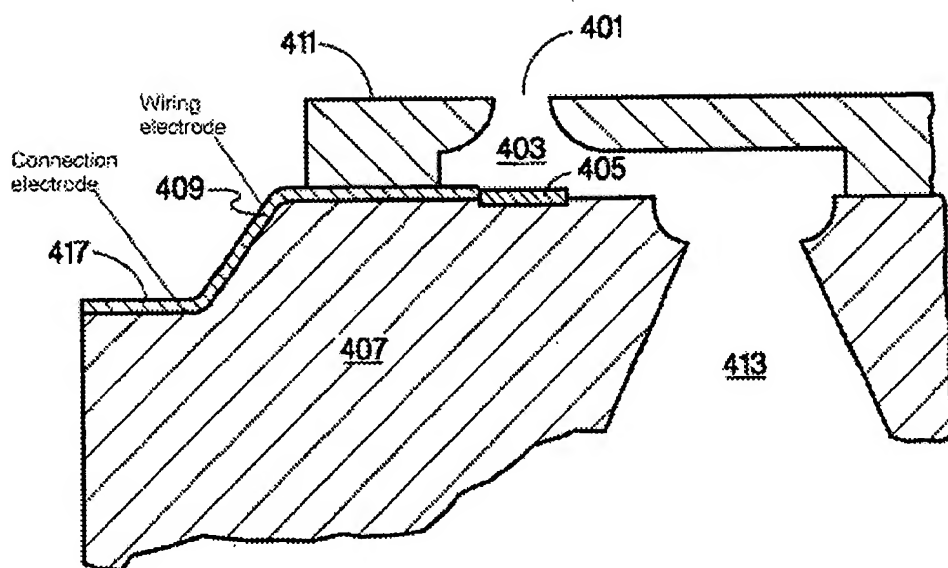


Fig. 4

As can be seen in the figures, the print head comprises a flat substrate having an end surface and front and back main surfaces, the front and back surfaces having an area that is larger than the end surface. A wiring electrode (409) is connected to an energy generating element (405), that is formed on the front surface. A stepped surface is provided at the end of the substrate. A connection electrode is connected to the wiring electrode and is provided on the stepped surface. An electrical wiring member (1115) is superimposed onto the connection electrode and is connected to the connection electrode through a bump electrode. Furthermore, as shown in Fig. 11, the connection electrode and the wiring member are vertically overlapped, with the bump electrode provided between them.

With regard to claim 7, the energy generating member is an electrothermal converting element.

With regard to claim 8, the energy generating member is disposed so as to face the discharge port (401).

With regard to claim 9, Fig. 2 illustrates the print heads are mounted on a cartridge (204).

Beerling et al. teaches the claimed invention with the exception of a sealing member, wherein the sealing member does not extend beyond the discharge port.

Wong et al. teaches (Fig. 5B) an ink jet print head having a sealing member (110) which covers the electrical connections and not extend beyond the discharge port. The sealing member provides the advantages of isolating the electrical connections from the ink and cleaning mechanism of the printer, while allowing the head to operate in close proximity to the print medium (col. 2:37-45).

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made to have provided Beerling et al. with a sealing member as taught by Wong et al., in order to provide the advantages of isolating the electrical connections from the ink and cleaning mechanism of the printer, while allowing the head to operate in close proximity to the print medium.

The steps of the method of claim 10 are deemed to be obvious in view of the functions of the structure discussed above, as one would obviously perform the claimed methods steps to arrive at the disclosed apparatus.

6. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beerling et al. (6,325,488) in view of Wong et al. (6,188,414), as applied to claims 1 and 7-10 above, and further in view of Silverbrook (5,796,416).

Beerling, as modified, teaches the claimed invention with the exception of the substrate being made of single crystal silicon.

Silverbrook teaches an ink jet print head having a substrate (101) that is made from single crystal silicon. This material provides the advantages of allowing the drive circuitry to be fabricated in the substrate, allowing the print heads to be manufactured using standard VLSI technology and providing substrates having high mechanical strength and rigidity (col. 10:37-49). The limitation directed to the anisotropic etching of the print head is not given patentable weight, since it is a method limitation and does not patentably limit the apparatus.

With regard to claim 3, Beerling et al. teaches that the stepped surface is located in an area of the substrate that becomes thinner in a stepwise fashion, in the vicinity of the end face.

With regard to claim 4, Beerling et al. teaches that the stepped surface is parallel to the front surface.

It would have been obvious to one of ordinary skill in the ink jet art at the time the invention was made to have manufactured the substrate of Beerling et al, as modified, from single crystal silicon for the purpose of providing the advantages of allowing drive circuitry to be fabricated in the substrate, allowing the print heads to be manufactured

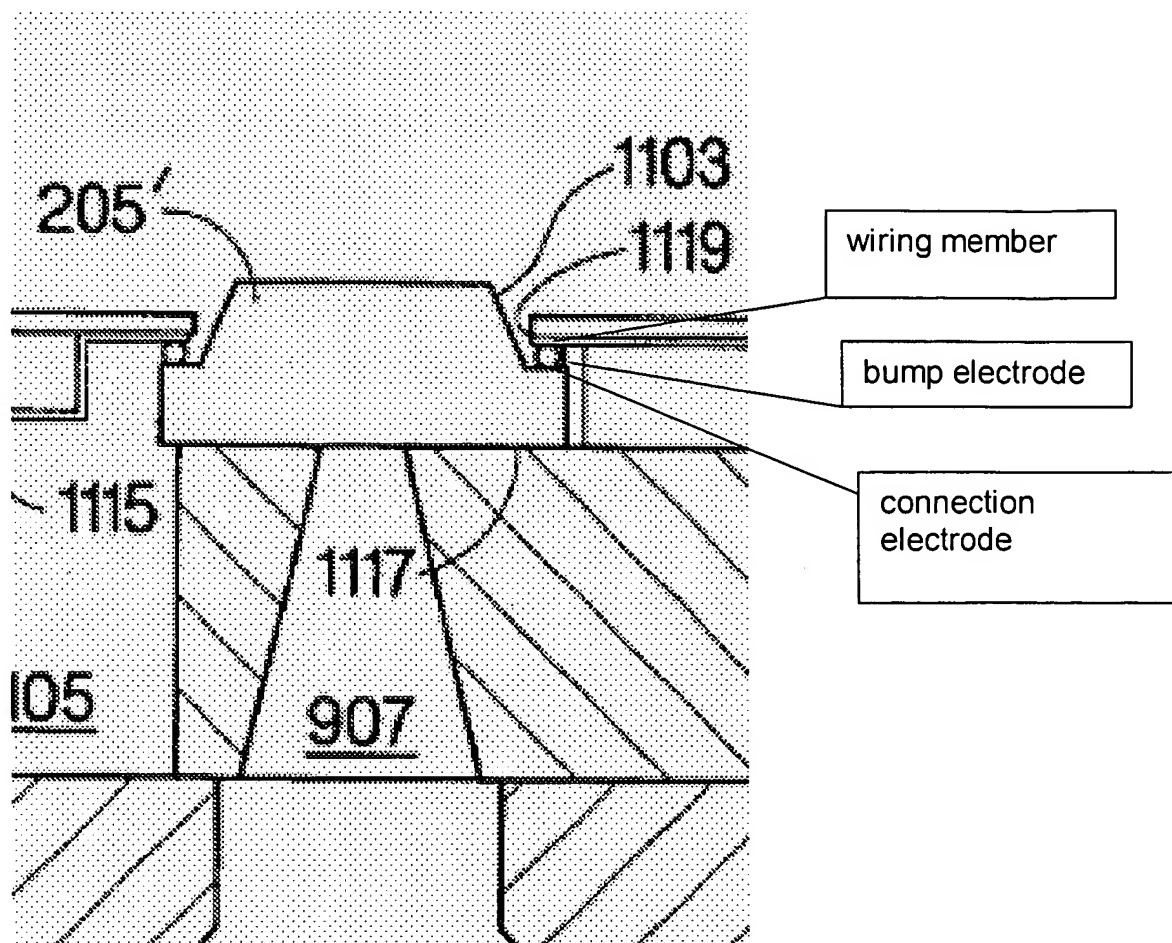
Art Unit: 2853

using standard VLSI technology and providing substrates having high mechanical strength and rigidity, as taught by Silverbrook.

Response to Arguments

7. Applicant's arguments filed 10/15/03 have been fully considered but they are not persuasive.

Applicant's argument that Wong does not teach the connection electrode, bump electrode and wiring member being vertically aligned are correct. However, this feature is taught by Beerling, as shown in the figure below, which illustrates a portion of Fig. 11. Thus, the prior teaches the limitation as claimed.



9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael S. Brooke whose telephone number is 703-305-0262. The examiner can normally be reached on M-F 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 703 308-4896. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 10/025,540
Art Unit: 2853

Page 9

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.



Michael S. Brooke
Examiner
Art Unit 2853

MSB
10/30/03

